CLAIMS

1. A vapour-compression type refrigerating machine, by which heat is moved from the low temperature side to the high temperature side, comprising: a compressor for sucking and compressing refrigerant; a condenser for cooling refrigerant of high pressure; a decompressing means for decompressing refrigerant; and an evaporator for evaporating refrigerant of low pressure, wherein

a refrigerant pipe connected on the suction side of the compressor and a refrigerant pipe connected on the discharge side of the compressor are integrated with each other into one body, and

further, a refrigerant pipe connected with the inlet side of the condenser and a refrigerant pipe connected with the outlet side of the condenser are integrated with each other into one body.

2. A vapour-compression type refrigerating machine according to claim 1, wherein the decompressing means is a temperature type expansion valve in which a variable throttling portion for adjusting the degree of throttle opening according to the superheat degree of refrigerant on the outlet side of the evaporator and a temperature detecting portion for detecting the degree of super heat of refrigerant are integrated into one body, and

the refrigerant pipe connected with the inlet side of the decompressing means and the refrigerant pipe connected with the outlet side of the temperature detecting portion are integrated into one body.

3. A vapour-compression type refrigerating machine according to claim 2, further comprising an intermediate joint by which: the refrigerant pipe connected with the discharge side of the compressor is connected with the refrigerant pipe connected with the inlet side of the condenser; the refrigerant pipe connected with the outlet side of the condenser is connected with the refrig rant pipe connected with the inlet side of the decompressing

means; and the refrigerant pipe connected with the outlet side of the temperature detecting portion is connected with the refrigerant pipe connected with the suction side of the compressor.

4. A vapour-compression type refrigerating machine according to claim 3, in which the evaporator is composed of a first and a second evaporator, the decompressing means is composed of a first decompressing means used for the first evaporator and a second decompressing means used for the second evaporator,

further comprising a second intermediate joint, wherein the refrigerant pipe connected with the outlet side of the condenser is connected with the refrigerant pipe connected with the inlet side of the first decompressing means by the second intermediate joint, the refrigerant pipe connected with the outlet side of the condenser is connected with the refrigerant pipe connected with the inlet side of the second decompressing means by the second intermediate joint, the refrigerant pipe connected with the outlet side of the temperature detecting portion of the first decompressing means is connected with the refrigerant pipe connected with the suction side of the compressor by the second intermediate joint, and the refrigerant pipe connected with the outlet side of the temperature detecting portion of the second decompressing means is connected with the refrigerant pipe connected with the suction side of the compressor by the second intermediate joint.

5. A vapour-compression type refrigerating machine according to claim 1, wherein the pipe in which the two types of refrigerant pipes are integrated into one body is integrally formed into one body by means of extrusion or drawing.

6. A vapour-compression type refrigerating machine according to claim 2, wherein the length of the pipe from the intermediate joint to the condenser is smaller than the length of the pipe from the intermediate joint to the

decompressing means.

7. A double pipe structure in which an inner pipe for circulating fluid of high pressure is laid in an outer pipe for circulating fluid of low pressure and the inner and the outer pipe are formed differently from each other and joined to a joint member at the respective end portions, wherein the inner and the outer pipe are joined to the joint member by a plastically deforming means.

8. A double pipe structure according to claim 7, wherein the joint member includes a port connected to another pipe, the plastically deforming means joins the inner pipe to the joint member by means of drawing for expanding an end portion or by means of bead pressure-contact machining, and the outer pipe is joined to the joint member when the outer pipe is pressure-connected to the joint member by means of drawing for contracting an end portion of the pipe.

9. A double pipe structure according to claim 7, wherein the joint member includes a port connected to another pipe, the plastically deforming means joins the inner pipe to the joint member by means of drawing for expanding an end portion or by means of bead pressure-contact machining, and the joint member is joined to the outer pipe when the joint member is pressure-connected to the outer pipe by means of drawing for contracting an end portion of the pipe.

10. A double pipe structure according to claim 7, wherein a seal member is interposed in the joint portion of the joint member and the inner pipe or in the joint portion of the joint member and the outer pipe.

11. A double pipe structure according to claim 7, wherein rigidity of the inner pipe is lower than rigidity of the outer pipe.

12. A double pipe structure in which an inner pipe for circulating fluid of high pressure is laid in an outer pipe for circulating fluid of low pressure and the inner and the outer pipe are formed differently from each

other and joined to a joint member at the respective end portions, wherein a bent portion is formed in a portion of the double pipe in the longitudinal direction, and a support member for preventing interference of the inner pipe with the outer pipe is arranged inside the bent portion.

13. A double pipe joint structure for connecting two double pipes in which an inner pipe for circulating fluid of high pressure is laid in an outer pipe for circulating fluid of low pressure and the inner and the outer pipe are formed integrally with or differently from each other and connected with each other by a connecting means, wherein

a first double pipe and a second double pipe are connected with each other by a joint means,

when one of the double pipes of the first and the second double pipe proceeds into the other double pipe, the joint means is elastically deformed and one of the double pipes can proceed into the joint means, and the first double pipe and the second double pipe can be connected with each other.

14. A double pipe joint structure according to claim 13, wherein the joint means includes a joint member, one end of which is joined to the first double pipe by a plastically deforming means, engaging with the respective outer pipes and also includes an engaging member attached to the joint member and capable of being engaged with the outer pipe of the second double pipe,

the engaging member includes an elastically engaging portion capable of being expanded when it is pushed by the outer pipe of the second double pipe in the case where the engaging member engages with the outer pipe of the second double pipe,

when the outer pipe of the second double pipe moves into the joint member, the inner pipe of the second double pipe moves into the joint member, and at a position where the elastic engaging portion of the

engaging member engages with the outer pipe of the second double pipe, the inner pipe of the first double pipe and the inner pipe of the second double pipe are located at a position being engaged with each other.

15. A double pipe joint structure according to claim 14, wherein the joint member is formed into a cylindrical shape, and a plurality of insertion groove portions, into which the elastic engaging portion of the engaging member is inserted, are formed in the circumferential direction.

16. A double pipe joint structure according to claim 14, wherein the joint member is joined to the groove portion, which is formed on the outer pipe of the first double pipe in the circumferential direction, by means of drawing for contracting an end portion.

17. A double pipe joint structure according to claim 14, wherein the engaging member is formed into a cylindrical shape and includes a first horizontal window portion extending from one end face in the axial direction at regular intervals and also includes a second horizontal window portion extending from the other end face, the first horizontal window portion and the second horizontal window portion are alternately arranged in the circumferential direction, and the elastic engaging portion is arranged in one of the thick portions in which the first horizontal window portion or the second horizontal window portion is not arranged.

18. A double pipe joint structure according to claim 14, wherein a groove portion capable of engaging with the elastic engaging portion of the engaging member is formed on the outer pipe of the second double pipe in the circumferential direction.

19. A double pipe joint structure according to claim 14, wherein a ring member attached to the groove portion formed on the outer pipe of the second double pipe is interposed between the outer pipe of the second double pipe and the elastic engaging member.

20. A double pipe joint structure according to claim 14, wherein an expanded portion, the diameter of which is larger than the diameter of the common cylindrical portion, capable of engaging with the elastic engaging portion, is formed on the outer pipe of the second double pipe.

21. A double pipe joint structure according to claim 13, wherein the joint means includes an expanded female side joint portion formed in the first double pipe and also includes an engaging member inserted into a plurality of insertion groove portions formed in the female side joint portion in the circumferential direction, capable of engaging with the outer pipe of the second double pipe,

the engaging member includes an elastically engaging portion capable of being expanded when it is pushed by the outer pipe of the second double pipe in the case where the engaging member engages with the outer pipe of the second double pipe, and the inner pipe of the second double pipe is arranged being capable of engaging with the inner pipe of the first double pipe.

22. A double pipe joint structure for connecting a double pipe with another pipe member via a joint means in which an inner pipe for circulating fluid of high pressure is laid in an outer pipe for circulating fluid of low pressure and the inner and the outer pipe are formed integrally with or differently from each other and connected with each other by a connecting means, wherein

the joint means includes a two-way branch joint, one side of which is connected with a pipe for high pressure, in which fluid of high pressure circulates, and also connected with a pipe for low pressure, in which fluid of low pressure circulates, the other side of which is connected with the double pipe having an inner pipe communicating with the pipe for high pressure and also having an outer pipe communicating with the pipe for low pressure, and the joint means also

includes an engaging member, one end portion of which is connected with the two-way branch joint, the other end of which is capable of engaging with the outer pipe of the double pipe,

the engaging member includes an elastic engaging portion inserted into the insertion groove portion, which is formed in the two-way branch joint in the circumferential direction, capable of engaging with the outer pipe of the double pipe, and

when the engaging member engages with the outer pipe of the double pipe, the elastic engaging portion is pushed by the outer pipe of the double pipe and the diameter is expanded and the inner pipe of the double pipe is arranged being capable of engaging with the inner pipe of the two-way branch joint.

23. A double pipe joint structure for connecting two double pipes in which an inner pipe for circulating fluid of high pressure is laid in an outer pipe for circulating fluid of low pressure and the inner and the outer pipe are formed integrally with or differently from each other and connected with each other by a connecting means, wherein

the first double pipe and the second double pipe are connected with each other by a joint means,

when the first double pipe and the second double pipe are located in a joining position, the first double pipe and the second double pipe are connected with each other when the joint means is joined to either double pipe by a plastically deforming means or both double pipes are fastened to each other by a fastening means.

24. A double pipe joint structure for connecting two double pipes in which an inner pipe for circulating fluid of high pressure is laid in an outer pipe for circulating fluid of low pressure and the inner and the outer pipe are formed integrally with or differently from

each other and connected with each other by a connecting means, wherein

the first double pipe and the second double pipe are connected with each other by a joint means,

the joint means includes a screw means, and when the first double pipe and the second double pipe are located at a joining position and the screw means is fastened, the first double pipe and the second double pipe are contacted with pressure so that the first double pipe and the second double pipe can be connected with each other.

25. A double pipe joint structure according to claim 13, wherein the connecting means includes a fin portion for supporting the inner and the outer pipe so that the inner and the outer pipe can be connected with each other in the radial direction.

26. A double pipe joint structure according to claim 13, wherein one end portion of the inner pipe of the first double pipe or the inner pipe of the second double pipe is expanded to be larger than the common cylindrical portion.

27. A double pipe joint structure according to claim 25, wherein a plurality of fin portions are formed being spirally extended from the inner pipe toward the inner circumferential face of the outer pipe.

28. A double pipe joint structure according to claim 25, wherein the fin portion is provided in such a manner that the end portion on the inner pipe side is extended from the end portion on the outer pipe side toward a position eccentric from the axial center of the inner pipe.

29. A double pipe joint structure according to claim 25, wherein the fin portion is formed being bent between the inner pipe and the outer pipe.

30. A double pipe joint structure according to claim 28, wherein the wall thickness of the fin portion

is smaller than the wall thickness of the inner pipe and the wall thickness of the inner pipe is smaller than th wall thickness of the outer pipe.

31. A double pipe joint structure for connecting two double pipes via a joint means in which an inner pipe for circulating fluid of high pressure is laid in an outer pipe for circulating fluid of low pressure and the inner and the outer pipe are formed integrally with or differently from each other and connected with each other by a connecting means, wherein

the diameters of the respective forward end portions of the inner pipes of the first double pipe and the second double pipe, which are opposed to each other, are formed larger than the inner diameter of the common cylindrical portion by means of expanding an end portion, and the respective inner pipes are connected with the bypass inner pipes engaged between the forward end portions of the respective inner pipes.

32. A double pipe joint structure for connecting double pipes to a two-way branch joint having an inner pipe introducing port and an outer pipe introducing port in which an inner pipe for circulating fluid of high pressure is laid in an outer pipe for circulating fluid of low pressure and the inner and the outer pipe are formed integrally with or differently from each other and connected with each other by a connecting means, wherein

a diameter of the forward end portion of the inner pipe of the double pipe is formed larger than the inner diameter of the common cylindrical portion by means of expanding the end portion and connected to the inner pipe introducing port, which is formed in the two-way branch joint, by a bypass pipe.

33. A double pipe joint structure according to claim 31, wherein the joint means includes an elastic engaging member which is elastically deformed so that the diameter can be expanded and contracted when one of the double pipes is inserted, and the double pipe can be

instantly inserted into the elastic engaging member.

34. A double pipe joint structure according to claim 31, wherein the joint means includes a first screw means having a female screw attached to the first double pipe and also includes a second screw means having a male screw portion capable of screwing to the female screw attached to the second double pipe, and the first double pipe can be joined to the second double pipe when the male screw is screwed to the female screw.

35. A double pipe joint structure according to claim 31, wherein the outer pipe of the first double pipe is attached with a restricting means for restricting a position of the first screw means.

36. A double pipe joint structure according to claim 35, wherein the restricting means is a C-ring attached to the first double pipe.

37. A double pipe joint structure according to claim 35, wherein the restricting means is a cylindrical member attached to the outer pipe of the first double pipe by means of spinning machining.

38. A double pipe joint structure according to claim 35, wherein the restricting means is a cylindrical member attached to the outer pipe of the first double pipe by means of drawing for contracting the end portion.

39. A double pipe joint structure according to claim 34, wherein the second screw means includes a union portion capable of engaging with a hexagonal tool.

40. A double pipe joint structure according to claim 31, wherein O-rings are attached to the seal grooves formed at both end portions of the bypass inner pipe by means of spinning machining.

41. A double pipe joint structure according to claim 31, wherein the bypass inner pipe is formed by means of bicolor forming in which a pipe member made of resin and rubber members arranged at both end portions of the pipe member are used.

42. A double pipe joint structure according to

claim 31, wherein the bypass inner pipe includes a fin portion and is held by a holding ring, the outer circumferential face of which is supported.